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09/998,222	12/03/2001	Hugo Ignacio de Lasa	UW07	5074

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EXAMINER

LISH, PETER J

ART UNIT

PAPER NUMBER

1754

DATE MAILED: 03/17/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/998,222

Applicant(s)

DE LASA ET AL.

Examiner

Peter J Lish

Art Unit

1754

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 15 January 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

### DETAILED ACTION

Applicant's arguments filed 1/17/03 have been fully considered but they are not persuasive. The calculations concerning the level of doping by Van Looij et al. are not persuasive since the assumed 100% Ni doping would not be expected to occur, given equilibrium and ion migration factors. The examples of Van Looij et al. should be repeated in order to show the doping levels actually attained.

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-7, 13-18, and 26-27 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Kobylinski et al. (USPN 4,605,676).

Kobylinski et al. disclose the production of a supported nickel catalyst wherein the nickel is deposited by the incipient wetness method on a refractory metal oxide, such as alumina, to distribute the nickel metal as small crystallines upon the support (column 2, lines 21-28). The catalyst contains from about 1-50 wt% nickel, preferably 10-20 wt% nickel based on total catalyst weight. Kobylinski et al. also disclose that the catalyst is produced to have an average

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particle diameter, which depends upon the type of reactor to be utilized, of from about 0.01 to about 6 mm, more preferably between 0.01 and 0.11 mm (between 10 and 110 microns) for a suspended catalyst (column 7, lines 18-26).

Kobylinski et al. teach that the incipient wetness technique is used to deposit nickel on the support material. They also teach that the impregnation steps are repeated with additional impregnation solutions in order to obtain the desired metal loading (column 5, lines 8-66). Kobylinski et al. do not disclose the specific crystal size or distribution characteristics of nickel on the support surface, however they do teach small crystallites. No difference is seen between the small crystallites of Kobylinski et al. and those of the applicant. Alternatively, it is noted that the crystal size and distribution are dependent on the number of times that the incipient wetness is performed. It would have been obvious to one of ordinary skill at the time of invention to have performed the incipient wetness method various times until achieving a desired small crystal size (of about 170 Angstroms average) and distribution of nickel on the support (of not more than 0.2 square meter of exposed nickel/square meter of support surface), since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Regarding claims 6-7, while the use of alpha-alumina is not specifically taught as the support material, Kobylinski et al. teach that a preferable surface area of the support is from about 150-225 square meters per gram and further teach the use of alumina (column 3, lines 6-15), therefore it is expected that alpha-alumina be used by Kobylinski et al. Alternatively, because alpha-alumina is a known high surface area alumina support material, it would have

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been obvious to one of ordinary skill at the time of invention to use alpha-alumina as the support for the catalyst of Kobylinski et al.

Claims 8-10 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Viltard et al. (USPN 6,238,549) alone or in view of Kobylinski et al. as above.

Viltard et al. disclose a nickel catalyst which may be supported on zeolites. Viltard et al. teach that the nickel makes up between 5-65 wt% of the catalyst and that the average nickel crystalline size in the catalyst is less than 100 Angstroms (column 9, lines 5-15). No difference can be seen between the catalyst of Viltard et al. and that of applicant.

Alternatively, it would have been obvious to one of ordinary skill at the time of invention to impregnate the catalyst support with nickel using the process of Kobylinski et al. as above in order to form the catalyst of Viltard et al. Furthermore, it would have been obvious to one of ordinary skill at the time of invention to have performed the incipient wetness method various times until achieving a desired small crystal size (of about 10-70 Angstroms average) and distribution of nickel on the support (of not more than 0.2 square meter of exposed nickel/square meter of support surface), since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

***Claim Rejections - 35 USC § 103***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-4, 6, 13-16, 23, and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Van Looij et al.

The rejection of the previous office action, paper #6, is maintained in its entirety and incorporated herein by reference.

Claims 11-12 and 19-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Viltard et al. (USPN 6,238,549) alone or in view of Kobylinski et al. as above.

Viltard et al. alone or in view of Kobylinski et al. is applied above.

While Viltard et al. do not explicitly teach the use of sodium exchanged Y zeolite or ultrastabilized Y zeolite, they do teach the use of a high surface area zeolite, with a surface area in the range of 30-300 square meters per gram. It would have been obvious to one of ordinary skill at the time of invention to use either a sodium exchanged or and ultrastabilized Y zeolite because they are well-known high surface area zeolites. Furthermore, while Viltard et al. do not specifically teach the size of the catalyst particles, it would have been obvious to one of ordinary skill at the time of invention to produce catalysts with an average size of between 20-100 microns, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Claims 8-12, 19-23, 25, and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jarosch et al. ("Novel Riser Simulator for Methane Reforming...") taken with Kobylinski et al. as above.

Jarosch et al. disclose a process for the steam reforming of methane. This process involves the use of a supported nickel catalyst, which is regenerated in the process. Nickel was impregnated on alpha-alumina, NaY zeolite, and USY zeolite supports. It would have been obvious to one of ordinary skill at the time of invention to use the technique of Kobylinski et al., as applied above, to impregnate the supports of Jarosch et al. in order to achieve a specific nickel loading.

Additionally, because the incipient wetness technique is well known in the art to be an effective means of impregnating zeolite supports as well as metal oxide supports, it would have been obvious to one of ordinary skill at the time of invention to use the technique of Kobylinski et al., as applied above, to impregnate the zeolite supports with nickel in order to produce the catalysts of Jarosch et al. in order to achieve a specific metal loading.

Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jarosch et al. taken with Kobylinski et al. as applied to claim 23 above, and further in view of JP 09025101 A.

Jarosch et al. teach a steam reforming of methane. They do not disclose a dry reforming process which has the same effective results. JP 09025101 A, however, teaches the reforming of methane using a carbon dioxide containing gas and a nickel catalyst. This method produces synthesis gas and hydrogen, just as Jarosch et al., but uses a dry reforming process, absent of steam. It would have been obvious to one of ordinary skill at the time of invention to use the dry

reforming reaction of JP 09025101 A in place of the steam reforming reaction of Jarosch et al. because it produces the same effective results.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter J Lish whose telephone number is 703-308-1772. The examiner can normally be reached on 9:00-6:00 Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on 703-308-3837. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-305-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.



PL  
March 5, 2003

**STUART L. HENDRICKSON  
PRIMARY EXAMINER**